UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/817,591	03/26/2001	Yihong Gong	CA1122	7751

23493 7590 09/04/2008

SUGHRUE MION, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037

EXAMINER	
TRAN, QUOC A	

ART UNIT	PAPER NUMBER
2176	

NOTIFICATION DATE	DELIVERY MODE
09/04/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@sughrue.com
USPatDocketing@sughrue.com

Office Action Summary	Application No.	Applicant(s)	
	09/817,591	GONG ET AL.	
	Examiner	Art Unit	
	Quoc A. Tran	2176	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 June 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This action is a **Final** in response to Amendment/Remarks filed 06/04/2008. Claims 1-32 are pending. Claims 1, 9, 13, 21, 26 and 29 are independent claims; originally filed 03/26/2001, which Claims Priority from Provisional Application 60254535, filed ***12/12/2000*** (by NEC), claims 6, 8, 18 and 20 have been amended.

It is noted the examiner objection to claims 6, 8, 18 and 20 which were set forth in the previous Office Action dated 03/04/2008 is here by withdrawn due to applicant's amendment filed 06/04/2008.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> ***(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.***

Claims 1-4, 9-16, 21-24, and 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hwang** et al., US20020078090A1 -Provisional No. 60/215,436 filed 06/30/2000 (hereinafter "Hwang"), in view of **Foltz et al.,** US006356864B1 - filed 07/23/1998 (hereinafter "Foltz").

Regarding independent claim 1,

Hwang teaches:

A method of creating a generic text summary of a document; said method comprising: obtaining the document; selecting a sentence for inclusion in said generic text summary in accordance with said computing, wherein the selected sentence has the computed score representing high degree of relevance of the corresponding to said document;

(See Page 4 Para 40 and at the Abstract→ Hwang discloses this limitation in that the selecting sentences for inclusion in the document text summary based upon the ranking (i.e. score representing high degree of relevance,)

deleting said selected sentence from said document and eliminating terms in said selected sentence from said document;

(See Page 4 Para 40-41→ Hwang discloses this limitation in that the selecting sentences for inclusion in the document text summary based upon the ranking, then the sentences determined for inclusion are then extracted (i.e. deleting) along with any desired context information (e.g., which paragraph each sentence is from, etc.) and merged.

and generating the generic text summary based on the selected sentence.

(See Page 4 Para 40-41 and the Abstract → Hwang discloses this limitation in that the generic text summary based on the selected sentence, by selecting sentences for inclusion in the document text summary based upon the ranking, then the sentences determined for inclusion are then extracted for constructing a text summarization.)

In addition, Hwang does not explicitly teach, but Foltz teaches:

creating a weighted document term-frequency vector for said document;

(See Column 2, Lines 20-25 and Column 10 Lines 15-25 → Foltz discloses this limitation in that each document is allocated a single vector within the data matrix (i.e., a weighted document term-frequency vector).)

wherein the selected sentence has the computed score representing high degree of relevance of the corresponding weighted sentence term-frequency vector to said weighted document term-frequency vector;

(See Column 2, Lines 20-25 and Column 10 Lines 15-25 → Foltz discloses this limitation in that the Latent Semantic Analysis (LSA) and Singular Value Decomposition (SVD) are used to analyze an essay, a sample text (i.e., document), then assign a numerical score to the document (i.e., a vector

representation of the selected text), wherein the segment vector represents the individual reference documents. A segment vector can be an entire reference text, abstract, title of a document, at least one paragraph of a text, at least one sentence of a text, or a collection of text objects that convey an idea or summarizes a topic. Each document is allocated a single vector within the data matrix (i.e., a weighted document term-frequency vector or weighted sentence term-frequency vector).)

for each sentence in said document, creating a weighted sentence term-frequency vector; computing a score for each said weighted sentence term-frequency vector in accordance with relevance to said weighted document term-frequency vector;

(See Column 2, Lines 20-25 and Column 10 Lines 15-25 → Foltz discloses this limitation in that the Latent Semantic Analysis (LSA) and Singular Value Decomposition (SVD) are used to analyze an essay, a sample text (i.e., document), then assign a numerical score to the document (i.e., a vector representation of the selected text), wherein the segment vector represents the individual reference documents. A segment vector can be an entire reference text, abstract, title of a document, at least one paragraph of a text, at least one sentence of a text, or a collection of text objects that convey an idea or summarizes a topic. Each document is allocated a single vector within the data matrix (i.e., a weighted document term-frequency vector or weighted sentence term-frequency vector).)

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang, to include the step of creating a weighted document term-frequency vector for said document; wherein the selected sentence has the computed score representing high degree of relevance of the corresponding weighted sentence term-frequency vector to said weighted document term-frequency vector for each sentence in said document, creating a weighted sentence term-frequency vector; computing a score for each said weighted sentence term-frequency vector in accordance with relevance to said weighted document term-frequency vector as taught by Foltz, for the purpose of providing a predictable result of said delivering fully informative and automatically generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

Regarding independent claim 9,

Claim 9 recites a system, included a CPU, memory, an interface, a display, a summarizer, a vector generator, a selector, and a document editor to select text, for performing the method recited in Claim 1. Thus, Hwang and Foltz disclose every limitation of Claim 9 and provides proper reasons to combine, as indicated in the above rejections for Claim 1 - See Hwang at Fig. 1 and Page 2-3 Para 21-22, and also see Foltz at Column 3 Lines 35-45, discloses the method generates a vector representation of a selected reference text from the plurality of reference text used to create the data matrix.

Regarding independent claim 13,

Claim 13 incorporates substantially similar subject matter as cited in claim 1. Thus, the rejection of claim 1 is fully incorporated.

In addition, Hwang teaches:

decomposing said document into individual sentences;

forming a candidate sentence set from said individual sentences; for each of said individual sentences in said candidate sentence set,

(See Page 4 Para 40-41 and the Abstract → Hwang discloses this limitation in that the generic text summary based on the selected sentence, by selecting sentences for inclusion in the document text summary based upon the ranking, then the sentences determined for inclusion are then extracted for constructing a text summarization.)

In addition, Hwang does not expressly teach, but Foltz teaches:

creating a weighted sentence term-frequency vector;

(See Column 2, Lines 20-25 and Column 10 Lines 15-25 → Foltz discloses this limitation in that the Latent Semantic Analysis (LSA) and Singular Value Decomposition (SVD) are used to analyze an essay, a sample text (i.e., document), then assign a numerical score to the document (i.e., a vector representation of the selected text), wherein the segment vector represents the individual reference documents. A segment vector can be an entire reference text, abstract, title of a document, at least one paragraph of a text, at least one sentence of a text, or a collection of text objects that convey an idea or

summarizes a topic. Each document is allocated a single vector within the data matrix (i.e., a weighted document term-frequency vector or weighted sentence term-frequency vector).)

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang, to include the step of decomposing said document into individual sentences; forming a candidate sentence set from said individual sentences; for each of said individual sentences in said candidate sentence set, creating a weighted sentence term-frequency vector as taught by Foltz, for the purpose of providing a predictable result of said delivering fully informative and automatically generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

Regarding independent claim 21,

Claim 21 incorporates substantially similar subject matter as cited in claim 1. Thus, the rejection of claim 1 is fully incorporated.

In addition, Foltz teaches:

> **constructing a terms-by-sentences matrix for said document; performing singular value decomposition on said terms-by-sentences matrix to obtain a singular value matrix and a right singular vector matrix, wherein each sentence in said document is represented by a column vector of a transpose of said right singular**

vector matrix; ranking each right singular vector in said right singular vector matrix;

(See Foltz at Column 6, Lines 25-30, discloses the method for preparing the data Matrix for Singular Value Decomposition (SVD), includes weighted value is applied to each cell within the term-by-document as shown in Table 2 Column 5 Line 55.

Also see Foltz at Fig. 1 and Column 7, Line 55→Column 9, Line 40, discloses Value Decomposition (SVD), includes weighted value is applied to each cell within the term-by-document as shown in Equation (1) (2), (3), and (4) producing each sentence in said document is represented by a column vector of a transpose of said right singular vector matrix; ranking each right singular vector in said right singular vector matrix;)

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang, to include the step of constructing a terms-by-sentences matrix for said document; performing singular value decomposition on said terms-by-sentences matrix to obtain a singular value matrix and a right singular vector matrix, wherein each sentence in said document is represented by a column vector of a transpose of said right singular vector matrix; ranking each right singular vector in said right singular vector matrix as taught by Foltz, for the purpose of providing a predictable result of said delivering fully informative and automatically generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

Regarding independent claim 26,

Claim 26 incorporates substantially similar subject matter as cited in claim 9. Thus, the rejection of claim 9 is fully incorporated.

In addition, Foltz teaches:

an SVD performer for performing singular value decomposition on said terms-by-sentences matrix to generate a singular value matrix and a right singular vector matrix;

(See Foltz at Column 6, Lines 25-30, discloses the method for preparing the data Matrix for Singular Value Decomposition (SVD), includes weighted value is applied to each cell within the term-by-document as shown in Table 2 Column 5 Line 55.

Also see Foltz at Fig. 1 and Column 7, Line 55→Column 9, Line 40, discloses Value Decomposition (SVD), includes weighted value is applied to each cell within the term-by-document as shown in Equation (1) (2), (3), and (4) producing each sentence in said document is represented by a column vector of a transpose of said right singular vector matrix; ranking each right singular vector in said right singular vector matrix;)

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang, to include the step wherein an SVD performer for performing singular value decomposition on said terms-by-sentences matrix to generate a singular value matrix and a right singular vector matrix as taught by Foltz, for the purpose of providing a predictable result of said delivering fully informative and automatically

generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

Regarding independent claim 29,

Claim 29 incorporates substantially similar subject matter as cited in claims 13, and 26. Thus, the rejection of claims 13, and 26 are fully incorporated. Thus Hwang and Foltz disclose every limitation of Claim 29 and provide proper reasons to combine, as indicated in the above rejections for Claims 13 and 26.)

Claim 2,

Hwang and Foltz teach the method of claim 1 and further comprise:

recreating said weighted document in accordance with said deleting and said eliminating; and selectively repeating said computing, said selecting, said deleting, said eliminating, and said recreating,

(See Page 4 Para 40-41 and the Abstract → Hwang discloses this limitation in that the generic text summary based on the selected sentence, by selecting sentences for inclusion in the document text summary based upon the ranking, then the sentences determined for inclusion are then extracted for constructing a text summarization.

See also Page 5 Para 47→ Hwang discloses this limitation in that each client, when a new document arrives, the system checks if the document is

relevant to the client. Processing new documents against pre-selected, client-specific concepts defined by the client, or inferred by the system, and computing the relevancy score for each document, the system can perform a continual text summarization method,)

In addition, Hwang does not explicitly teach, but Foltz teaches:

Term-frequency vector,

(See Foltz at Fig. 1 and Column 7, Line 55→Column 9, Line 40, discloses Value Decomposition (SVD), includes weighted value is applied to each cell within the term-by-document),

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang, to include the step of creating a term-frequency vector as taught by Foltz, for the purpose of providing a predictable result of said delivering fully informative and automatically generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

Claim 3,

Hwang and Foltz teach the method of claim 2 and further comprise:

wherein said selectively repeating is terminated when a predetermined number of sentences have been selected.

(See also Page 5 Para 47→ Hwang discloses this limitation in that each client, when a new document arrives, the system checks if the document is relevant to

the client. Processing new documents against pre-selected, client-specific concepts defined by the client, or inferred by the system, and computing the relevancy score for each document, the system can perform a continual text summarization method,)

Also see Fig. 3 and at Page 4 Para 36-41→ Hwang discloses this limitation in that the flow chart of Fig. 3 shows the selected sentences are then ranked (block 310) by their score. Based upon the ranking of the sentences and pre-defined criteria, the sentences that are to be included in the summary are determined in block 312, and out put the text summary at block 318 and terminated the process (i.e. end).

Claim 4,

Hwang and Foltz teach the method of claim 2 and further comprise:

calculating an inner product of said weighted sentence term-frequency vector and said weighted document term-frequency vector

(See Foltz at Fig. 1 and Column 7, Line 55→Column 9, Line 40, discloses Value Decomposition (SVD), includes weighted value is applied to each cell within the term-by-document, wherein the dot products (i.e., inner product) between points in the space can be used to access and compare objects.)

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang, to include the step of creating a term-frequency vector as taught by Foltz, for the purpose of providing a predictable result of said delivering fully informative and

automatically generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

Claim 10,

Hwang and Foltz teach the method of claim 9 and further comprise:

wherein said vector generator recreates said weighted document term-frequency vector in accordance with output results,

(See Foltz at Fig. 1 and Column 7, Line 55→Column 9, Line 40, discloses Value Decomposition (SVD), includes weighted value is applied to each cell within the term-by-document.

Also see Column 3 Lines 30-45, Foltz discloses this limitation that generates a vector representation of a selected reference text from the plurality of reference text used to create the data matrix. This selected reference text is otherwise known as a standard reference text or is equivalently known as a standard text (i.e. generates vectors in accordance with output results).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang, to include the step of recreating said vector generator said weighted document term-frequency vector in accordance with output results as taught by Foltz, for the purpose of providing a predictable result of said delivering fully informative and automatically generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

Claim 11,

Hwang and Foltz teach the method of claim 10 and further comprise:

wherein said summarizer further comprises a loop routine for generating iterative sequential operations.

(See Page 5 Para 47→ Hwang discloses this limitation in that each client, when a new document arrives, the system checks if the document is relevant to the client. Processing new documents against pre-selected, client-specific concepts defined by the client, or inferred by the system, and computing the relevancy score for each document, the system can perform a continual text summarization method,)

Claim 12,

Hwang and Foltz teach the method of claim 11 and further comprise:

wherein said selectively repeating is terminated when a predetermined number of sentences have been selected.

(See Fig. 3 and at Page 4 Para 36-41→ Hwang discloses this limitation in that the flow chart of Fig. 3 shows the selected sentences are then ranked (block 310) by their score. Based upon the ranking of the sentences and pre-defined criteria, the sentences that are to be included in the summary are determined in block 312, and out put the text summary at block 318 and terminated the process (i.e. end).

Claims 14-16 *respectively*,

Claims 14-16 respectively correspond to Claims 2-4. Thus, Hwang in view of Foltz discloses/teaches every limitation of Claims 14-16 respectively and provide proper reasons to combine, as indicated in the above rejections for Claims 2-4.

Claims 22-23 *respectively*,

Claims 22-23 respectively correspond to Claims 2-3. Thus, Hwang in view of Foltz disclose/teach every limitation of Claims 22-23 respectively and provide proper reasons to combine, as indicated in the above rejections for Claims 2-3.

Claim 24,

Hwang and Foltz teach the method of claim 21 and further comprise:

wherein said selecting further comprises identifying a sentence having a desired index value with said right singular vector.

(See Foltz at Fig. 1 and Column 7, Line 55→Column 9, Line 40, discloses Value Decomposition (SVD), includes weighted value is applied to each cell within the term-by-document, wherein the matrices of left and right singular vectors and So is the diagonal matrix of singular values.

Also see Column 3 Lines 30-45, Foltz discloses this limitation that generates a vector representation of a selected reference text from the plurality

of reference text used to create the data matrix as shown in table 2 "*term by document*" matrix (see table 2 Column 5 Lines 35-55). This selected reference text is otherwise known as a standard reference text or is equivalently known as a standard text (i.e. generates vectors in accordance with output results).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang, to include the step of selecting further comprises identifying a sentence having a desired index value with said right singular vector as taught by Foltz, for the purpose of providing a predictable result of said delivering fully informative and automatically generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

Claims 27-28 *respectively*,

Claims 27-28 respectively correspond to Claims 11-12. Thus, Hwang in view of Foltz discloses/teaches every limitation of Claims 27-28 respectively and provide proper reasons to combine, as indicated in the above rejections for Claims 11-12.

Claims 30-31 *respectively*,

Claims 23-24 respectively correspond to Claims 23-24. Thus, Hwang in view of Foltz discloses/teaches every limitation of Claims 30-31 respectively and provide proper reasons to combine, as indicated in the above rejections for Claims 23-24.

Claims 5, 7, 17, 19, 25, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hwang** et al., US20020078090A1 -Provisional No. 60/215,436 filed 06/30/2000 (hereinafter "Hwang"), in view of **Foltz et al.,** US006356864B1 - filed 07/23/1998 (hereinafter "Foltz"), further in view of **Boguraev et al.,** US Patent No. 6,865,572 Con of US Patent No. 6,353,824 - filed 11/18/1997 (hereinafter "Boguraev")

Claim 5,

Hwang and Foltz teach the method of claim 2 and further comprise:

wherein said creating a weighted sentence term-frequency vector

(See Foltz at Fig. 1 and Column 7, Line 55→Column 9, Line 40, discloses Value Decomposition (SVD), includes weighted value is applied to each cell within the term-by-document,

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang, to include the step of creating a term-frequency vector as taught by Foltz, for the purpose of providing a predictable result of said delivering fully informative and automatically generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

In addition Hwang and Foltz do not expressly teach, but Boguraev teaches:

implementing a local weighting function and implementing a global weighting function.

(See Column 11, Lines 55-65→ Boguraev discloses this limitation in that the discourse structure included the local and global salient value for every referent in the text that is available by anaphora resolution.)

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang and Foltz, to include the step of implementing a local weighting function and implementing a global weighting function as taught by Boguraev, for the purpose of providing a predictable result of said delivering fully informative and automatically generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

Claim 7,

Hwang and Foltz teach the method of claim 1 and further comprise:

wherein said creating a weighted document term-frequency vector

(See Foltz at Fig. 1 and Column 7, Line 55→Column 9, Line 40, discloses Value Decomposition (SVD), includes weighted value is applied to each cell within the term-by-document,

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang,

to include the step of creating a term-frequency vector as taught by Foltz, for the purpose of providing a predictable result of said delivering fully informative and automatically generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

In addition Hwang and Foltz do not expressly teach, but Boguraev teaches:

implementing a local weighting function and implementing a global weighting function

(See Column 11, Lines 55-65→ Boguraev discloses this limitation in that the discourse structure included the local and global salient value for every referent in the text that is available by anaphora resolution.)

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang and Foltz, to include the step of implementing a local weighting function and implementing a global weighting function as taught by Boguraev, for the purpose of providing a predictable result of said delivering fully informative and automatically generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

Claims 17, and 19 *respectively*,

Claims 17, 19 and 20 respectively correspond to Claims 5, and 7. Thus, Hwang in view of Foltz, and further in view of Boguraev disclose/teach every limitation of Claims 17, and 19 respectively and provide proper reasons to combine, as indicated in the above rejections for Claims 5 and 7.

Claims 25 and 32,

Claims 25 and 32 correspond to Claim 5. Thus, Hwang in view of Foltz, and further in view of Boguraev disclose/teach every limitation of Claims 25 and 32 and provide proper reasons to combine, as indicated in the above rejections for Claim 5.

Claims 6, 8, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hwang** et al., US20020078090A1 -Provisional No. 60/215,436 filed 06/30/2000 (hereinafter "Hwang"), in view of **Foltz et al.,** US006356864B1 - filed 07/23/1998 (hereinafter "Foltz"), further in view of **Boguraev et al.,** US Patent No. 6,865,572 Con of US Patent No. 6,353,824 - filed 11/18/1997 (hereinafter "Boguraev"), and further in view of **William W. Cohen** "Data Integration Using Similarity Joins and a Word-Based Information Representation Language" By At& T Lab- Research, Shannon Laboratory, Published by ACM, Vol. 18; No. 3, July 2000, Pages 288-321, (hereinafter "Cohen"),

Claim 6,

Hwang, Foltz and Boguraev do not expressly teach, but Cohen teaches:

wherein said creating a weighted sentence term-frequency vector comprises normalizing said weighted sentence term-frequency vector by dividing the weighted sentence term-frequency vector by a magnitude of the weighted sentence term-frequency vector.

(Cohen applied the wildly used vector space model and TF-IDF weighting scheme with assigning weight o terms with unit length normalization; to normalizing each said weighted sentence term-frequency vector by dividing the weighted sentence term-frequency vector by a magnitude of the weighted sentence term-frequency vector, such as :

$$sim(\vec{v},\ \vec{w}) = \sum_{t \in T} \frac{\vec{v}_t'' \cdot \vec{w}_t}{\|\vec{v}\| \cdot \|\vec{w}\|}$$

wherein V and W are two document vector content term *t of whole document T* and $\|\vec{v}\| \cdot \|\vec{w}\|$ are magnitude of $\vec{v}_t'' \cdot \vec{w}_t$ the general idea behind this scheme is that the magnitude of the component vector *Vt and Wt* is related to the "importance" of the term *t* in the document T (two documents are similar when they are sharing many "important terms". This is generally discloses at

[Page 290-291 of Cohen]. It is noted the above usually interpreted as the COSINE of the angle between V1 and V2, such as $\cos\theta = \frac{\mathbf{v_1} \cdot \mathbf{v_2}}{\|\mathbf{v_1}\| \|\mathbf{v_2}\|}$

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang, Foltz and Boguraev, to include the step of creating a weighted sentence term-frequency vector comprises normalizing each said weighted sentence term-frequency vector by dividing the weighted sentence term-frequency vector by a magnitude of the weighted sentence term-frequency vector as taught by Cohen, for the purpose of providing a predictable result of said delivering fully informative and automatically generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

Claim 8,

Hwang, Foltz and Boguraev do not expressly teach, but Cohen teaches:

wherein said creating a weighted document term-frequency vector comprises normalizing said weighted document term-frequency vector by dividing the weighted document term-frequency vector by a magnitude of the weighted document term-frequency vector.

(Cohen applied the wildly used vector space model and TF-IDF weighting scheme with assigning weight o terms with unit length normalization; to

normalizing each said weighted document term-frequency vector by dividing the weighted document term-frequency vector by a magnitude of the weighted document term-frequency vector, such as :

$$sim(\vec{v}, \vec{w}) = \sum_{t \in T} \frac{\vec{v}_t \cdot \vec{w}_t}{\|\vec{v}\| \cdot \|\vec{w}\|}$$

wherein V and W are two document vector content term *t of whole document T* and $\|\vec{v}\| \cdot \|\vec{w}\|$ are magnitude of $\vec{v}_t \cdot \vec{w}_t$ the general idea behind this scheme is that the magnitude of the component vector *Vt and Wt* is related to the "importance" of the term *t* in the document T (two documents are similar when they are sharing many "important terms". This is generally discloses at [Page 290-291 of Cohen]. It is noted the above usually interpreted as the COSINE of the angle between V1 and V2, such as $\cos\theta = \frac{\mathbf{v_1} \cdot \mathbf{v_2}}{\|\mathbf{v_1}\| \|\mathbf{v_2}\|}$

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang, Foltz and Boguraev, to include the step of creating a weighted document term-frequency vector comprises normalizing said weighted document term-frequency vector by dividing the weighted document term-frequency vector by a magnitude of the weighted document term-frequency vector as taught by Cohen, for the purpose of providing a predictable result of said delivering fully informative and

automatically generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

Claims 18 and 20 *respectively*,

Claims 18 and 20 respectively correspond to Claims 6 and 8. Thus, Hwang, Foltz, Boguraev and Cohen disclose/teach every limitation of Claims 18 and 20 respectively and provide proper reasons to combine, as indicated in the above rejections for Claims 6 and 8.

It is noted that any citations to specific, pages, columns, lines, or figures in the prior art references and any interpretation of the references should not be considered to be limiting in any way. A reference is relevant for all it contains and may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art. See, MPEP 2123.

Response to Arguments

Brief description of cited prior art:

Hwang discloses a text summarizer that allows the selecting sentences for inclusion in the document text summary based upon the ranking (i.e. score representing high degree of relevance,) [Para 10 and the Abstract]. Also Hwang further discloses the selecting sentences for inclusion in the document text summary based upon the ranking, then the sentences determined for inclusion are then extracted [the selected sentences are remove from the document] along with any desired context information (e.g., which paragraph each sentence is from, etc.) This is generally disclosed at [Para 40-41 of Hwang].

Foltz discloses a segment vector can be an entire reference text, abstract, title of a document, at least one paragraph of a text, at least one sentence of a text, or a collection of text objects that convey an idea or summarizes a topic. Each document is allocated a single vector within the data matrix, wherein the data matrix is weighted and associated with term-frequency vector of a segment vector of the document. Foltz applied the wildly used, LSI [latent Semantic Indexing or LSA [Latent Semantic Analysis] and reduced SVD [Singular Value Decomposition]. This is generally disclosed at [Column 2, Lines 20-25 and Column 10 Lines 15-25]. This allows a sample text being analyzing and evaluating, such as essay(s), or document(s). This methodology compares sample text to a reference essay(s), document(s), or text segment(s) within a reference essay or document. The methodology analyzes the amount of subject-

matter information in the sample text, analyzes the relevance of subject matter information in the sample and evaluates the semantic coherence of the sample. This methodology presumes there is an underlying, latent semantic structure in the usage of words. The method parses and stores text objects [terms, key words] and text segments [sentences, phrases, and paragraph] from the sample text and reference text into a two-dimensional data matrix (i.e. term (i) of document (j)). in addition, a weight is computed for each text object and applied to each data matrix cell value and performs a singular value decomposition [SVD] on the data matrix, which produces three trained matrices and computes a vector representation of the sample text and reference text using the three trained matrices. The methodology compares the sample text to the reference text by computing the *cosine between the vector representation of the sample text* and *the vector representation of the standard reference text* or the dot product is used to compare the sample text to the standard reference text. A grade [score, weight or the relevancy value] is assigned to the sample text based on the degree of similarity between the sample text and the standard reference text [Abstract].

Boguraev discloses a method and system that is relates to presentation of documents in a manner that allows the user to quickly ascertain their contents [Column 1, Line 20] wherein the document structure included the local and global salient value for every referent in the text that is available by anaphora resolution [Column 11, Lines 55-65].

Cohen applied the wildly used vector space model and TF-IDF weighting scheme with assigning weight o terms with unit length normalization; to normalizing each said weighted document term-frequency vector by dividing the weighted document term-frequency vector by a magnitude of the weighted document term-frequency vector, also known as the COSINE of the angle between V1 and V2, such as :

$$sim(\vec{v}, \vec{w}) = \sum_{t \in T} \frac{\vec{v}_t \cdot \vec{w}_t}{\|\vec{v}\| \cdot \|\vec{w}\|}$$

wherein V and W are two document vector content term *t of whole document T* and $\|\vec{v}\| \cdot \|\vec{w}\|$ are magnitude of $\vec{v}_t \cdot \vec{w}_t$ the general idea behind this scheme is that the magnitude of the component vector *Vt and Wt* is related to the "importance" of the term *t* in the document T (two documents are similar when they are sharing many "important terms". This is generally discloses at [Page 290-291 of Cohen]. It is noted the above usually interpreted as the COSINE of the angle between V1 and V2, such as $\cos\theta = \frac{\mathbf{v_1} \cdot \mathbf{v_2}}{\|\mathbf{v_1}\| \|\mathbf{v_2}\|}$ and system that is relates to presentation of documents in a manner that allows the user to quickly ascertain their contents [Column 1, Line 20] wherein the document structure included the local and global salient value for every referent in the text that is available by anaphora resolution [Column 11, Lines 55-65].

Response to Remarks:

Beginning on page 11 of the Remarks (hereinafter the remarks), Applicant argues the following issues, which are accordingly addressed below.

It is noted, to address the amended portions of claims 6, 8, 18 and 20 of the amendment filed 06/04/2008, the Examiner introduce Cohen reference for these limitation (see the above rejection for details).

Regarding claims Objections:

It is noted the examiner objection to claims 6, 8, 18 and 20 which were set forth in the previous Office Action dated 03/04/2008 is here by withdrawn due to applicant's amendment filed 06/04/2008.

Regarding rejections of claims 1-4, 9-16, 21-24 and 26-31:

First, applicant asserts that the proposed combination [of Hwang, and Foltz] when considered as a whole does not teach or suggest the claimed feature that "*deleting said sentence from said document*," as recited in claims 1- (the remarks Page 12 Lines 8-18), because "*there is no indication in Hwang that the 'extracted' senteces are deleted*". Similar argument is applied to independent claim 9 [the remarks Page 14, Lines 6-16]; independent claim 13 [the remarks Page 14, Line 18→ Page 15, Line 8]; indepndent claim 26 [the remarks Page 17, Lines 4-15];]; indepndent claim 29 [the remarks Page 17, Line 17→ Page 18 Line 5];

For purposes of responding to Appellant's argument, the examiner will assume that the Appellant is arguing for the patentability of Claims 1, 9, 13, 26 and 29.

The Examiner disagrees.

As discuss above and in previously presented Office Action mailed 03/04/2008. As recognized by the Examiner, **Hwang**'s text summarizer includes at least two steps processes, first selected the selecting sentences for inclusion in the document text summary based upon the ranking (i.e. score representing high degree of relevance,) [Para 10 and the Abstract]. Based upon the score representing high degree of relevance of the selected sentences, then exacted from the document. Therefore, the artisan would have well appreciated that Hwang's method of extracting selected text from the document based upon score representing high degree of relevance is equivalent to deleting the selected text from the document based upon score representing high degree of relevance as cited in independent claim 1.

This interpretation is supported by the applicant's disclosure, which is stated, "*The selected sentence may then be removed from the candidate sentence set, and all the terms contained in this selected sentence may be eliminated from the document (block 105). As shown in block 105, deletion of the sentence*" see disclosure at [page 8 Lines 11-14].

Thus, Hwang clearly disclose the selected sentence …deleting said selected sentence from said document , as recited in claim 1.

Second, applicant asserts that the proposed combination [of Hwang, and Foltz] when considered as a whole does not teach or suggest the claimed feature that *"creating a weighted document term-frequency vector ... creating a weighted sentence term-frequenc vector ... computing a score for each said weighted sentence term-frequency vector in accordance with relevance to said weighted document term-frequency vector*," as recited in claims 1- (the remarks Page 13 Line 22→Page 14, Line 2), because Foltz "*may disclose creating a "document ... vector" or a "sentence ... vector." However, in broad terms, Foltz is a method for grading essays by comparing them to a standard text*, " (the remarks Page 13, Lines 1-13). Similar argument is applied to independent claim 9 [the remarks Page 14, Lines 6-16]; independent claim 13 [the remarks Page 14, Line 18→ Page 15, Line 8]; indepndent claim 26 [the remarks Page 17, Lines 4-15];]; indepndent claim 29 [the remarks Page 17, Line 17→ Page 18 Line 5];

For purposes of responding to Appellant's argument, the examiner will assume that the Appellant is arguing for the patentability of Claims 1, 9, 13, 26 and 29.

The Examiner disagrees.

As discuss above and in previously presented Office Action mailed 03/04/2008. As recognized by the Examiner, **Hwang's** text summarizer does not expressly teach the use of creating a weighted document/sentence term-frequency vector inorder to create a text summary such as recited in independent claim 1. On the other hand, "*Foltz at column 2, lines 20-25 and column 10, lines 15-25, theses passages teach that "A segment vector can be ... an entire reference ... [or] at least one sentence of a text .... " (Foltz, col. 10, lines 18-21.) Therefore, Foltz may disclose creating a "document ... vector" or a "sentence ... vector.*" [Admitted by the applicant at Page 13 Lines 1-5 of the remarks dated 03/04/2008];

In addition, the Examine believes the applicant arguments; specifically the limitation of ""*UNLIKE CLAIM 1*" …, Foltz in broad term is a method for grading essays by comparing them to a standard text" is not positively recited in the claim language.

For further clarification **Foltz** discloses a segment vector can be an entire reference text, abstract, title of a document, at least one paragraph of a text, at least one sentence of a text, or a collection of text objects that convey an idea or summarizes a topic. Each document is allocated a single vector within the data matrix, wherein the data matrix is weighted and associated with term-frequency vector of a segment vector of the document. Foltz applied the wildly used, LSI [latent Semantic Indexing or LSA [Latent Semantic Analysis] and reduced SVD [Singular Value Decomposition]. This is generally disclosed at [Column 2, Lines

20-25 and Column 10 Lines 15-25]. This allows a sample text being analyzing and evaluating, such as essay(s), or document(s). This methodology compares sample text to a reference essay(s), document(s), or text segment(s) within a reference essay or document. The methodology analyzes the amount of subject-matter information in the sample text, analyzes the relevance of subject matter information in the sample and evaluates the semantic coherence of the sample. This methodology presumes there is an underlying, latent semantic structure in the usage of words. The method parses and stores text objects [terms, key words] and text segments [sentences, phrases, and paragraph] from the sample text and reference text into a two-dimensional data matrix (i.e. term (i) of document (j)). in addition, a weight is computed for each text object and applied to each data matrix cell value and performs a singular value decomposition [SVD] on the data matrix, which produces three trained matrices and computes a vector representation of the sample text and reference text using the three trained matrices. The methodology compares the sample text to the reference text by computing the *cosine between the vector representation of the sample text* and *the vector representation of the standard reference text* or the dot product is used to compare the sample text to the standard reference text. A grade [score, weight or the relevancy value] is assigned to the sample text based on the degree of similarity between the sample text and the standard reference text [Abstract].

Thus, Foltz clearly disclose creating a weighted document term-frequency vector ... creating a weighted sentence term-frequenc vector ... computing a score for each said weighted sentence term-frequency vector in accordance with relevance to said weighted document term-frequency vector, as recited in claim1.

In addition for further supported of the above, in the current Office Action, Examiner introduce ***Cohen*** reference, whom applied the wildly used vector space model and TF-IDF weighting scheme with assigning weights to terms with unit length normalization; to normalizing each said weighted document term-frequency vector by dividing the weighted document term-frequency vector by a magnitude of the weighted document term-frequency vector, such as:

$$sim(\vec{v}, \vec{w}) = \sum_{t \in T} \frac{\vec{v}_t \cdot \vec{w}_t}{\|\vec{v}\| \cdot \|\vec{w}\|}$$

wherein Vt and Wt are two documents vector content term *t of whole document T* and $\|\vec{v}\| \cdot \|\vec{w}\|$ are magnitude of $\vec{v}_t \cdot \vec{w}_t$ the general idea behind this scheme is that the magnitude of the component vector *Vt and Wt* is related to the "importance" of the term *t* in the document T (two documents are similar when they are sharing many "important terms". This is generally discloses at [Page 290-291 of Cohen]. It is noted the above usually interpreted as the COSINE of the angle between V1 and V2, such as $\cos\theta = \frac{\mathbf{v_1} \cdot \mathbf{v_2}}{\|\mathbf{v_1}\| \|\mathbf{v_2}\|}$ and system that is relates to presentation of documents in a manner that allows the user to quickly

ascertain their contents [Column 1, Line 20] wherein the document structure included the local and global salient value for every referent in the text that is available by anaphora resolution [Column 11, Lines 55-65].

In addition, "What matters is the objective reach of the claim. If the claim extends to what is obvious, it is invalid under § 103." KSR Int'l Co. v. Teleflex, Inc., 127 S. Ct. 1727, 1742 (2007). To be nonobvious, an improvement must be "more than the predictable use of prior art elements according to their established functions." Id. at 1740.

In this case, the Examiner's analysis Hwang's teachings relate to a text summarizer that allows the selecting sentences for inclusion in the document text summary based upon the ranking (i.e. score representing high degree of relevance,) [Para 10 and the Abstract].

As recognized by the Examiner, Hwang's text summarizer does not expressly teach the use of creating a weighted document term-frequency vector ... creating a weighted sentence term-frequenc vector ... computing a score for each said weighted sentence term-frequency vector in accordance with relevance to said weighted document term-frequency vector. On the other hand, in what is fairly characterized as analogous art in accordance with the above-noted case law, Foltz teaches a segment vector can be ... an entire reference ... [or] at least one sentence of a text ....This is generally disclose [at column 2, lines 20-25 and column 10, lines 15-25 and col. 10, lines 18-21]. Therefore, the artisan would have well appreciated that Foltz relates to creating a weighted

document/sentence term-frequency vector utilizing LSI or LSA and SVD known method that is enabling the feature of said based upon the score representing high degree of relevance of the selected sentences, then exacted from the document as in Hwang. Base upon the creating a weighted document/sentence term-frequency vector utilizing LSI or LSA and SVD known method that is enabling the feature of said based upon the score representing high degree of relevance of the selected sentences, then exacted from the document, for the purpose of providing a predictable result of said delivering fully informative and automatically generate a text summary from a document focused on the user's interests - See Hwang at Page 1-2 Para 12.

Thus Hwang and Foltz clearly discloses the selected sentence …deleting said selected sentence from said document based upon the creating a weighted document/sentence term-frequency vector... computing a score for each said weighted document/sentence term-frequency vector in accordance with relevance to said weighted documen/sentencet term-frequency vector, as recited in claim 1 and provided proper reasons to combine.

Third, applicant asserts that the proposed combination [of Hwang, and Foltz] when considered as a whole does not teach or suggest the claimed feature that *"ranking each right singular vector in said right singular vector matrix"* as recited in claim 21- (the remarks Page 16, Lines 11-13), because "*SVD has been known for somtime, Application od SVD to document retreiveval was presented by Bary. One use of what was discussed by Berry was patented by Foltz. Claim 21 is setting forth another different and distinguishable use that neither Berry nor Foltz appeared to have considered*" (the remarks Page 16 Lines 1-6 and 13-16).

For purposes of responding to Appellant's argument, the examiner will assume that the Appellant is arguing for the patentability of Claim 21.

The Examiner disagrees.

First, the Examine believes the applicant arguments; specifically the Berry reference is not a prior art of record of the current and previous Office Action dated 03/04/2008. Thus this argument is moot.

Second, the remarks admitted that in practice the use of SVD for determine the ranking each right singular vector in said right singular vector matrix is wildly used and known for sometime…One use of what was discussed by Berry was patented by Foltz. This is generally discloses at [Page 16 Lines13-16 of the remarks]. Thus Foltz discloses determine the ranking each right singular vector in said right singular vector matrix and it is is wildly used and known for sometime.

Third, for further clarification, as recognized by the Examiner, **Hwang's** text summarizer does not expressly teach the use of ranking each right singular vector in said right singular vector matrix such as recited in independent claim 1. On the other hand, **Foltz** discloses the method for preparing the data Matrix for Singular Value Decomposition (SVD), includes weighted value is applied to each cell within the term-by-document as shown in Table 2 Column 5 Line 55, wherein the Value Decomposition (SVD), includes weighted value is applied to each cell within the term-by-document as shown in Equation (1) (2), (3), and (4) producing each sentence in said document is represented by a column vector of a transpose of said right singular vector matrix; ranking each right singular vector in said right singular vector matrix; this is generally discloses at [Fig. 1; Column 6, Lines 25-30, and Column 7, Line 55→Column 9, Line 40 of Foltz].

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, disclosed in Hwang, to include the step of ranking each right singular vector in said right singular vector matrix as taught by Foltz, for the purpose of providing a predictable result of said delivering fully informative and automatically generate a text summary from a document focused on the user's interests - See Hwang at [Page 1-2 Para 12.]

Thus Hwang and Foltz clearly discloses the ranking each right singular vector in said right singular vector matrix, as recited in claim 21 and provided proper reasons to combine.

Regarding rejections of claims 1, 9, 13, 21, 26 and 29:

It is noted at [Page 18 Line 6] of the remarks, which is stated "*independent claims 1, 9, 13, 21, 26 and 29 in view of Boguraev*", the Examiner believed this is a typography error of the intended of "*independent claims 1, 9, 13, 21, 26 and 29 in view of Hwang and Foltz*", (see the above responses to the remarks section First →Third and the rejection and the previous rejection dated 03/04/2008 for details).

Accordingly, based upon all the above evidence, thus Hwang, Foltz, Boguraev and Cohen clearly disclose all the limitation of claims 1-32 and provided proper reasons to combine. Thus claims 1-32 remain rejected at eat at this time.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quoc A. Tran whose telephone number is 571-272-8664. The examiner can normally be reached on Monday through Friday from 9 AM to 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doug Hutton can be reached on 571-272-4137. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Quoc A. Tran
Patent Examiner

/Doug Hutton/
Doug Hutton
Supervisory Primary Examiner
Technology Center 2100